

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
690 Walnut Ave.St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-021726**Date Inspected:** 10-Mar-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Items Observed**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Field Splice W10/W11
- B). Deck Access Hole
- C). Pipe Welding

A). Field Splice W10/W11

The QAI observed the Submerged Arc Welding (SAW) process of the bottom plate field splice identified as Weld Number (WN): 10W-11W-D2. The welding was performed by the James Zhen ID-6001 utilizing Submerged Arc Welding (SAW) process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also utilized by the Quality Control (QC) inspector, William Sherwood, to monitor the and to verify of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the field splice. The QAI observed the QC inspector's initial verification the welding parameters and were noted as follows: 570 amps, 32.5 volts, a travel speed measured at 392 mm per minute (mm/m) and a calculated heat input of 2.8 kj/mm. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents.

The QAI observed the continuous tack welding of the "A" deck plate splice identified as WN: 10W-11W-A. The welding of the field splice was concentrated at approximately mid point of segment A3 through A5. The welding

WELDING INSPECTION REPORT

(Continued Page 2 of 4)

was performed by the welders Wai Kitlai ID-2953 and Hua Qiang Hwang ID-2930 utilizing the Flux Cored Arc Welding (FCAW) process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-F3200A. The average welding parameters were verified and recorded as 279 amps, 24.1 volts with a travel speed measured as 350 mm/m. The WPS was also utilized by the QC inspector, William Sherwood, as a reference to verify the amperage and to monitor the welding. The minimum preheat temperature of 20 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents.

At the conclusion of the tack welding, the QAI observed the Submerged Arc Welding (SAW) process of the deck plate field splice identified as Weld Number (WN): 10W-11W-A, segment 3A through 5A. The welding was performed by the welding operator James Zhen ID-6001 utilizing the SAW as per the WPS, ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also utilized by the AB/F Enterprises Quality Control (QC) inspector, Mr. Sherwood, to monitor the welding operation and to verify welding parameters during the CJP welding of the groove joint. The QAI observed the QC inspector verify the amperage as follows; 560 amps, 32.5 volts, a travel speed measured at 405mm per minute and the calculated heat input of 2.68 kJ/mm. The minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. At the time of these observations no issues were noted by the QAI.

B). Deck Access Hole

The QAI observed two (2) excavations of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) performed by the QC Technician, Steve McConnell. The excavations were performed by the welder Wen Han Yu ID-6317 utilizing a high cycle grinder to remove the defects. At the conclusion of the excavations the QC inspector performed a visual inspection and a Magnetic Particle Test of the areas. No rejectable indications were noted by the QC inspector and the welder commence the welding of the excavations utilizing the 4.0 mm low hydrogen electrode and the Shielded Metal Arc Welding (SMAW) as the per WPS ABF-WPS-D15-1000-Repair Rev. 2. The QAI verified the welding parameters as 175 amps and the minimum preheat temperature 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later in the shift the QAI observed at random intervals the QC inspector monitoring and verifying the welding parameters. The dimensions of the excavations were noted by the QC inspector as follows; Y=965 mm, L=80 mm, d=18 mm and Y=3285 mm, L=80 mm and d=16 mm.

The QAI also observed the welder Wen Han Yu perform the CJP groove welding of the transverse stiffener field splice identified as WN: 2E-PP13.5-E5-TS. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1010, Rev.1 and was also utilized by the QC inspector Mr. McConnell as a reference to perform the inspection during the welding operation. The amperage was recorded as 121 amps and the minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to be in compliance with the contract specifications.

C). Piping

The QAI observed the welder, Rick Kiikvee-ID-5319, perform the field welding of the socket welds identified as 1-CAOP1-W2-W, 2-CAOP1-W2-W, 3-CAOP1-W2-W and 4-CAOP1-W2-W. These weld joints are branch members attached to the utility and compressed air lines at the W2W1 pier column. The welding was performed utilizing the Weld Procedure Specification (WPS) identified as 1-12-1 which was also utilized by the QC inspector,

WELDING INSPECTION REPORT

(Continued Page 3 of 4)

Steve Jensen, to monitor the welding and to verify the welding parameters.

Later in the shift the QAI observed the QC inspector perform a visual weld inspection of the above mentioned welds and no issues were noted by the QC inspector. The QAI concurs with the QC inspector's assessment.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspectors utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs below illustrate some of the work observed during this scheduled shift.



Summary of Conversations:

There were general conversations with Senior Quality Control Inspector, Bonifacio Daquinag, Jr., at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy (510) 385-5910, who represents the Office of Structural Materials for your project.

Inspected By: Reyes, Danny

Quality Assurance Inspector

WELDING INSPECTION REPORT

(Continued Page 4 of 4)

Reviewed By: Levell,Bill

QA Reviewer